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THE KENT INCORPORATED SOCIETY
FOR PROMOTING EXPERIMENTS IN
HORTICULTURE

ADMINISTRATIVE REPORT

(THIRTY-NINTH YEAR)

GENERAL DEVELOPMENT AND ACTIVITIES

10 JUL 1959

EAST MALLING RESEARCH STATION

Near MAIDSTONE

KENT

1st October, 1950, to 30th September, 1951

Published April, 1952

GOVERNING MEMBERS OF THE SOCIETY

Appointed by the Ministry of Agriculture:

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D. CURZON LEWIS, Esq., High Weald Farms, Boarshead, Crowborough, East Sussex. (*Appointed June*, 1951.)

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Appointed by the University of Bristol:

Professor T. WALLACE, C.B.E., M.C., D.Sc., F.R.I.C., The Research Station, Long Ashton, near Bristol.

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Professor E. J. MASKELL, F.R.S., Botanical Department, The University, Edgbaston, Birmingham, 15.

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B. S. Furneaux, Esq., M.Sc., 94 Warwick Park, Tunbridge Wells, Kent.
D. Skilbeck, Esq., M.A., Wye College, Wye, Kent.

Appointed by the Research and Advisory Committee of Wye College, Kent:

Professor H. W. Miles, D.Sc., Ph.D., Wye College, Wye, Kent.

Appointed by the Council of John Innes Horticultural Institution:

M. B. Crane, Esq., V.M.H., F.R.S., John Innes Horticultural Institution, Bayfordbury, Hertford, Herts.

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F. A. Secrett, Esq., C.B.E., F.L.S., V.M.H., Hurst Farm, Milford, near Godalming, Surrey.

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M. V. Courage, Esq., Anchor Brewhouse, Horselydown, London, S.E.1.

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G. T. Cook, Esq., Lulworth, Queen's Avenue, Maidstone, Kent.

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E. U. Bloor, Esq., Tudor Grange, Nettlestead, Ipswich, Suffolk. (*Retired June*, 1951.)
G. E. Tuker, Esq., Thorn Cottage, Danbury, Essex.
H. A. Haile, Esq., " The Mount ", Norwich Road, Wisbech, Cambs. (*Appointed June*, 1951.)

Appointed by the National Farmers' Union (Kent Branch):

W. Alexander, Esq., M.B.E., Home Farm, Eynsford, Kent.
Alfred Day, Esq., O.B.E., J.P., St. Aubyns, Sutton Valence, Kent.
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W. Talbot Edmonds, Esq., Allington Farm, Maidstone, Kent.
E. W. Gaskain, Esq., Rhode Court, Selling, near Faversham, Kent. (*Retired June*, 1951.)
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C. T. Miller, Esq., Wested Farm, Swanley, Kent.
D. J. Moor, Esq., Nichol Farm, Teynham, Sittingbourne, Kent.
J. W. S. Mount, Esq., Little Barton, Canterbury, Kent.
T. Neame, Esq., Macknade, Faversham, Kent.
C. L. Newitt, Esq., Cuckoo Orchard, Hartlip, Sittingbourne, Kent. (*Appointed June*, 1951.)
J. F. Towner, Esq., Salts Farm, Loose, near Maidstone, Kent.
R. D. Wickham, Esq., Gate House Farm, Brenchley, Kent. (*Appointed June*, 1951.)
W. Rodney Wilson, Esq., Mount Ephraim, Cranbrook, Kent. (*Retired June*, 1951.)

Appointed by the Council of the Horticultural Trades' Association:

L. J Cook, Esq., A.H.R.H.S., Dingleden, 7 Drapers Road, Enfield, Middlesex.

Appointed by the East Malling Research Station Association:

W. P. Seabrook, Esq., St. Barnabas, Frinton-on-Sea, Essex.

R. D. Wickham, Esq., Gate House Farm, Brenchley, Kent. (*Retired June*, 1951.)

A. M. Bear, Esq., Tendring, Magham Down, Hailsham, Sussex. (*Appointed June*, 1951.)

Appointed by East Malling Research Station:

F. R. Tubbs, Esq., M.Sc., Ph.D.(Lond.), A.R.C.S., D.I.C., F.L.S.

Appointed by the Staff Council of East Malling Research Station:

R. J. Garner, Esq., M.Sc., N.D.H., Dip.Hort.(Reading).

MEMBERS OF THE EXECUTIVE COMMITTEE

(Governing Members elected at the General Meeting, June, 1951)

Professor V. H. Blackman, Sc.D., F.R.S. (Vice-Chairman).
Professor F. T. Brooks, C.B.E., M.A., F.R.S.
Professor Wm. Brown, D.Sc., F.R.S.
G. T. Cook, Esq.
L. J. Cook, Esq., A.H.R.H.S.
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Alfred Day, Esq., O.B.E., J.P.
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W. Talbot Edmonds, Esq.
W. Fowle, Esq.
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Sir Edward Hardy.
J. W. S. Mount, Esq.
T. Neame, Esq. (Chairman).
W. P. Seabrook, Esq.
J. F. Towner, Esq.
G. E. Tuker, Esq.
Professor T. Wallace, C.B.E., M.C., D.Sc., F.R.I.C.

The Director:

F. R. Tubbs, Esq., M.Sc., Ph.D.(Lond.), A.R.C.S., D.I.C., F.L.S.

The Representative of the Staff Council:

R. J. Garner, Esq., M.Sc., N.D.H., Dip.Hort.(Reading).

Co-opted Members:

Professor F. G. Gregory, D.Sc., F.R.S., Imperial College of Science and Technology, South Kensington, S.W.7.

Sir Edward Salisbury, C.B.E., F.L.S., D.Sc., V.P.R.S., 49 Kew Green, Kew, Surrey.

Lieut.-Colonel Sir Albert Stern, K.B.E., C.M.G., M.A., Barham Court, Maidstone, Kent.

Captain R. Wellington, M.C., Colescus, Gorran Haven, St. Austell, Cornwall.

STAFF

(1ST OCTOBER, 1951)

Director: F. R. TUBBS,* M.Sc.(Lond.), Ph.D.(Lond.), D.I.C., A.R.C.S., F.L.S.
Assistant to Director: T. N. HOBLYN,* Hort.Dip.(Wye).

Pomology:

W. S. ROGERS,* M.A.(Cantab.), D.Sc.(Lond.), Dip.Hort.(Cantab.), A.Inst.P.
Miss A. B. BEAKBANE, Ph.D.(Lond.), N.D.H.
N. H. GRUBB, M.S.A.(Cornell). *Part-time.*
R. J. GARNER, M.Sc., N.D.H., Dip.Hort.(Reading).
D. W. P. GREENHAM, M.A.(Cantab.).
H. M. TYDEMAN, *Plant Breeding.*
Miss E. M. GLENN, B.Sc.(Lond.), *Field Records.*
Miss I. MODLIBOWSKA, Ph.D.(Lond.).
A. P. PRESTON, N.D.H.(Hons.).
Miss E. C. THOMPSON.
Miss B. G. MOSSE, B.Sc.(Lond.), Dip.Hort.(Swanley), *Histological Investigations.*
Miss J. M. PATON, Hort.Dip.(E. of Scotland), *Field Records.*
Miss D. J. WILSON, B.Sc.Hort.(Reading), *Field Records.*
Miss M. H. E. DAVIES, B.Sc.(Lond.).
Miss C. P. NICOLL, B.Sc.Hort.(Reading).
J. P. RUXTON, M.A.(Oxon).
J. E. GOODE, B.Sc.(Birmingham).
C. H. W. SLATER.
Miss M. J. TAYLOR, B.Sc.Hort.(Reading). (*Resigned August*, 1951.)
Miss E. KEEP, B.Sc.Hort.(Reading). (*Appointed September*, 1951.)

Assistants (Scientific):

Miss E. C. M. ASHDOWN.
Miss J. BURTON.
Miss S. J. COGGER.
Miss P. HARRIS.
Miss G. P. R. HILLS. (*Resigned September*, 1951.)
Miss F. M. HODGES.
Miss M. TAPLEY.
D. G. L. HOOPER.
Miss J. M. KEMP. (*Appointed March*, 1951.)
W. J. USBORNE. (*Appointed April*, 1951.)
Miss H. J. INKPEN. (*Appointed September*, 1951.)

Statistics:

T. N. HOBLYN.*
S. C. PEARCE, Ph.D.(Lond.).
G. M. JOLLY, B.Sc.(Aberdeen). (*Appointed May*, 1951).
G. H. FREEMAN, B.A., Dip.Stat.(Oxon). (*Appointed January*, 1951.)
G. F. W. BUCKLAND, B.A., Dip.Agric.(Cantab.), *Biometric Studies.* (*Resigned February*, 1951.)
G. E. DAVIES, B.Sc.(Wales), *Biometric Studies.* (*Appointed October*, 1951.)

* Recognized Teacher of the University of London.
† Appointed under special grant from Agricultural Research Council.

Assistants (Scientific) :
Miss V. V. Fry. (*Resigned August*, 1951.)
Miss J. M. Fuller. (*Appointed April*, 1951.)
Miss L. V. Stickings.
Miss J. A. Dolding. (*Appointed July*, 1951.)

Plant Physiology: M. C. Vyvyan,* M.A.(Cantab.), D.Sc.(Lond.).
D. H. Maggs, B.Sc.(Reading). (*Appointed February*, 1951.)
Miss M. R. Rawes.
G. F. Trowell.

Assistants (Scientific) :
Miss J. G. Smith.
R. W. Love.
J. Larking. (*Rejoined July*, 1951.)

Members of Staff of the Imperial College of Science and Technology working in collaboration with the Physiology Section :
E. S. J. Hatcher, Ph.D.(Bristol).
H. W. B. Barlow, B.Sc.(Edin.).
C. R. Hancock, B.Sc.(Bristol).
F. W. M. Llewelyn, B.Sc.(Lond.), A.R.C.S.

Assistants (Scientific) :
B. F. J. Barrett. (*Resigned January*, 1951.)
W. R. Marchant.
A. H. Gregory. (*Appointed December*, 1950.)

Biochemistry: W. A. Roach,* D.Sc.(Lond.), A.R.C.S., D.I.C., A.R.I.C.
A. E. Bradfield, D.Sc.(Wales), Ph.D.(Wales), *Organic Chemist.*
S. G. Thompson, M.C., T.D., M.A.(Oxon). (*Retired March*, 1951).
A. C. Mason, B.Sc.(Lond.), F.R.I.C., *Physical Chemist.*
F. H. Vanstone, Ph.D.(Wales), A.Inst.P., *Physicist.*
A. E. Flood, M.A.(Cantab.), Ph.D.(Manc.), *Organic Chemist.*
H. J. Philcox.
Miss A. V. Delap, B.A., B.Sc.(Dublin), *Botanist.*
Miss E. M. Ford, B.Sc.(Lond.), A.R.C.S., *Assistant Botanist.*

Special Assistant :
Miss M. E. Bunyard, A.R.R.C.

Assistants (Scientific) :
H. Hutchins.
Miss B. M. Kidwell.
Mrs. R. D. Souter.
R. Neve.
E. C. Wills.
Miss F. M. Woolgar. (*Resigned March*, 1951.)
Miss S. M. Lloyd. (*Resigned September*, 1951.)
Miss M. M. Acott. (*Re-engaged April*, 1951.)
Mrs. K. O. Burton (*née* Miss K. O. Strowgler).
Miss M. E. Jenner.
Miss E. M. Price.
Miss P. A. Newman. (*Appointed September*, 1951.)
Miss E. M. H. Wilson. (*Appointed October*, 1951.)

Members of Staff of the Imperial College of Science and Technology working in collaboration with the Biochemistry Section :
B. D. Bolas,* D.Sc.(Lond.), D.I.C.
H. C. Ruck, B.Sc.Hort.(Reading).
Miss C. C. Macnamara.

Assistants (Scientific):
Miss B. Milton. (*Resigned May*, 1951.)
Miss A. M. Spary. (*Appointed July*, 1951.)

Plant Pathology: R. V. Harris,* D.Sc.(Lond.), A.R.C.S., D.I.C., M.I.Biol.
M. H. Moore, M.Sc.(Reading), Ph.D.(Lond.), Dip.Hort. (Reading).
W. G. Keyworth, Ph.D.(Lond.), A.R.C.S., D.I.C., M.I.Biol.
A. F. Posnette, M.A.(Cantab.), A.I.C.T.A.
J. Paine, B.Sc.(Lond.), A.R.C.S., A.I.C.T.A. (*Part-time from 1st May*, 1951.)
J. E. Crosse, B.Sc.(Birmingham).
A. Kozlowski, Ph.D.(Lwow). (*Resigned October*, 1950.)
D. S. Kirkham, B.Sc.(Lond.).
P. W. Talboys, B.Sc.(Lond.), Ph.D.(Lond.), D.I.C., M.I.Biol.
J. T. Legg, B.Sc.(Lond.). (*Appointed August*, 1951.)
Miss M. Bennett, B.Sc.Hort.(Lond.), Dip.Hort.(Swanley), *Field records; also attached Entomology and Plant Protective Chemistry.*
P. J. Ormerod, B.A.Agric.(Cantab.).
Miss P. M. Goode, B.Sc.Agric.(Dunelm).
R. Cropley, Dip.Hort.(Reading).
Miss E. C. E. Ellenberger, B.Sc.Hort.(Lond.). (*Appointed April*, 1951.)
Miss P. Webb, B.Sc.(Lond.), *Field records; also attached Entomology and Plant Protective Chemistry.* (*Appointed October*, 1951.)

Assistants (Scientific):
R. D. Souter.
Miss B. I. Fleet.
Miss M. M. Joyce.
Miss S. Squires.
Miss G. W. Goodier. (*Appointed April*, 1951.)
Miss H. M. Grover. (*Appointed April*, 1951.)
N. Harrison. (*Appointed April*, 1951.)

Entomology: A. M. Massee,* O.B.E., D.Sc.(Lond.), F.R.E.S.
G. H. L. Dicker, Ph.D.(Lond.), A.R.C.S., F.R.E.S.
M. D. Austin, F.R.E.S., *Red Spider Investigations in Essex.*
R. S. Pitcher, Ph.D.(Lond.), Dip.Agric.(Wye), Dip.Ento.(Wye), *Eelworm and Gall Midges.*
Miss D. E. Griffin, B.Sc.(Lond.), A.R.C.S., F.R.E.S., *Bio-assay of Insecticides attached to Plant Protective Chemistry.*
Miss E. Collyer, Ph.D.(Lond.), *Beneficial Insects of Fruit.*
Miss J. R. Groves, B.Sc.Hort.(Reading), F.R.E.S., *Codling Moth and other fruit Tortricids.*
J. B. Briggs, B.Sc.Hort.(Reading).

Assistants (Scientific):
E. F. Souter.
Miss S. O. Philcox.

Plant Protective Chemistry: A. H. M. KIRBY, M.Sc.(Lond.), Ph.D.(Lond.), A.R.I.C.
M. ALLEN, B.Sc.(Lond.).
R. P. TEW, A.R.I.C. (*Appointed February*, 1951.)
R. G. GAMBRILL.
E. L. FRICK, B.Sc.Agric.(Wales).
Miss W. M. PHILLIPS, B.Sc.(Lond.).

For Biological Assistant, see Miss D. E. GRIFFIN, *Entomology Section.*

Assistants (Scientific):
Miss V. M. DREW.
S. R. B. SOLLY. (*Resigned October*, 1950.)
Miss J. I. BRACKENBURY. (*Resigned May*, 1951.)
Miss J. RICHARDSON.
D. TUERSLEY. (*Appointed December*, 1950. *Resigned June*, 1951.)
Miss R. H. BISHOP. (*Appointed September*, 1951.)
R. S. LARGE. (*Appointed October*, 1951.)

Scottish Raspberry Investigation: ‡ *Headquarters—University College, Dundee.*
R. V. HARRIS,* *Head of Investigation.*
C. H. CADMAN, B.Sc.(Liv.), Ph.D.(Edin.), F.R.S.E.,† *Plant Pathologist.* (*In charge.*)
C. A. WOOD, Ph.D.(Wales),† *Pomologist.*
R. J. ROSE.†

Clerical Assistant:
Mrs. A. S. COULL,† *Part-time.*

Assistants (Scientific):
R. W. REID.†
P. H. RACIONZER.†

Scientific Liaison: H. B. S. MONTGOMERY, B.A.(Dublin), Ph.D.(Lond.), D.I.C.
A. C. PAINTER, O.B.E.
J. H. WALKER, B.Sc.Agric.(Reading).
E. G. COKER, B.Sc.Hort.(Lond.).

Clerical Assistant:
Miss M. E. EMM.

Assistant (Scientific):
Miss J. C. IRVING.

Meteorological Records: A. P. PRESTON.
G. F. TROWELL.

Librarian: S. R. BALL, B.A.(Lond.), F.L.A.

Photographer: E. YOXALL JONES.

Assistant (Scientific): Miss D. SIMMONDS. (*Appointed January*, 1951. *Resigned September*, 1951.)

‡ Transferred to the Scottish Horticultural Research Institute, April, 1951.

FARM STAFF.

Farm Supervisor: F. H. VILLIERS, M.Sc.Agric.Econ., B.Sc.Agric.(Reading), N.D.A.

Assistant Plantations Officer: Miss B. F. SEYMOUR.

Experimental Nurseries: T. V. DIXON.

Experimental Greenhouses: M. M. MACNEILL, B.Sc.Hort.(Wye), C.D.H.(Glos.).
A. TIDY.
R. ABEL-SMITH. (*Temporary appointment February to September*, 1951.)

Workshops: G. WELLER.
K. W. G. BUNYARD. *Laboratory Instrument Mechanic.*

Farm Staff with twenty-five years' service:

C. BATES (36).
J. DENYER (31).
E. WENHAM (31).
W. HORTON (29).
J. TANNER (29).
H. CRITTENDEN (28).
E. HAYES (28).
Mrs. R. HODGES (28).
W. HENSON (27) (*Fruit Foreman*).
W. JENNER (25).

ADMINISTRATION.

Secretary: C. T. ROYLE, M.C.

Assistant to the Secretary: T. R. LITTLEHALES.

Book-keeper: P. R. WOOD.

Director's Personal Secretary: Miss L. M. READ. (*Resigned September*, 1951.)

Clerical Staff: Miss J. M. COY, Miss J. D. MARTIN (*Resigned November*, 1950), Miss J. M. PARSONS (*Resigned November*, 1950), Miss L. SHERRATT, Miss P. M. RAYFIELD, Miss R. M. WICKHAM, Miss I. CROSS, Mrs. F. J. FITNESS, Miss D. M. ANSELL (*Resigned June*, 1951), Miss M. E. WEDGBURY (*Resigned July*, 1951), Miss P. H. WESTACOTT (*Resigned December*, 1950), Miss D. CLEGG (*Resigned October*, 1950), Miss I. BELL, Miss P. RAYFIELD, Miss J. BATES (*Resigned March*, 1951), Miss K. D. APPS, Miss D. L. CARD (*Appointed October*, 1950), Miss B. J. GOSLING (*Appointed November*, 1950), Miss C. R. WESTWOOD (*Appointed January*, 1951), Miss P. HUGHES (*Appointed July*, 1951), Miss P. M. LINCOLN (*Appointed August*, 1951), Miss G. E. WRIGHT (*Appointed August*, 1951), Miss V. THEOBALD (*Appointed August*, 1951).

VISITORS.

Tours of the Station are arranged by appointment on Tuesday and Thursday afternoons. Visitors with special interests are received by appointment on the mornings of these days and may then join the general tour later if they wish. Wednesdays and Fridays are reserved for visiting research workers who also should make an appointment to ensure that a useful programme for the visit can be prepared.

All visitors wishing to see the work of the Station should go to the Enquiry Office at the Research Laboratories.

Visitors coming by road should take the turning to East Malling, opposite " The Bull ", Larkfield, on the main London-Maidstone road. The entrance gate to the Research Station is on the left, opposite the " King and Queen " in East Malling.

Bus Service: From Maidstone by the Maidstone and District Motor Services Limited, every 20 minutes from Maidstone to East Malling.

Passenger Station: EAST MALLING HALT (British Railways, Southern Region).

Goods Station: AYLESFORD (British Railways, Southern Region).

Correspondence: All correspondence should be addressed to the East Malling Research Station, near Maidstone, Kent.

Telephone: Maidstone 7294 (3 lines). *Telegrams:* Research, East Malling.

THE COMMONWEALTH BUREAU OF HORTICULTURE AND PLANTATION CROPS

Accommodated at Bradbourne, the Administrative Headquarters of the East Malling Research Station.

STAFF.

Director: D. AKENHEAD, O.B.E., M.A.(Oxon), B.Sc.Agric.(Lond.).

Consultant Director: F. R. TUBBS, M.Sc.(Lond.), Ph.D.(Lond.), D.I.C., A.R.C.S., F.L.S.

Assistant Director: G. K. ARGLES, Dip.Hort.(Wye), A.I.C.T.A.

Assistants: H. WORMALD, D.Sc.(Lond.), A.R.C.S., D.I.C.
V. H. GOLDSCHMIDT, Ph.D.(Berlin).
Miss P. J. ROWE-DUTTON, B.Sc.Hort.(Lond.).
Mrs. E. ULYATT, Dip.Hort.(Eisgrub.)

Clerical Staff: MISS M. B. ROGERS, Miss M. M. DURLING, Miss J. E. MORRISON, Miss J. CRANHAM (*Appointed June*, 1951).

NATIONAL AGRICULTURAL ADVISORY SERVICE

Accommodated at Bradbourne, the Administrative Headquarters of the East Malling Research Station.

Telephone: Maidstone 7278.

PROVINCIAL ADVISORY OFFICER—FRUIT, SOUTH-EASTERN PROVINCE
W. G. KENT, N.D.H.

Clerical Assistant: Mrs. J. E. WALDREN. (*Appointed January*, 1951.)

GENERAL DEVELOPMENT AND ACTIVITIES

INTRODUCTORY.

In presenting this Thirty-ninth Report on the general activities of the Station the Executive Committee would draw special attention to the part played by the Station in the gradual, but increasingly impressive developments in the facilities for horticultural research and experiment in this country as a whole. When the National Agricultural Advisory Service was formed a few years ago, there was a fear among our Members that the Station might become increasingly isolated, the research staff being cut off from the advisory service and thus from the growers to whose ultimate benefit their work was directed. The Scientific Liaison Section has seen to it that our contacts with the advisory officers have become stronger each year, so that the latest results of research may go forward to the Industry with the least possible delay. Twenty years ago when the staff was small and the scope of research limited, some growers had an intimate acquaintance with the staff and work of the Station as a whole. To-day, when the subjects for research are so much more numerous and diverse, the many personal contacts with growers made by individual members of staff probably add up to a much greater total than in former days.

During the past two years the Station, together with its sister Institutes at Long Ashton and Bayfordbury, has become even more closely concerned with N.A.A.S. activities, taking an increasingly large share in the planning of work to be carried out by the National Fruit Trials and at the new Experimental Horticulture Stations. These developments not only widen the scope of our own work, but help forward the cause of horticultural research in the whole country.

Abroad, old contacts have been renewed and new ones made as a result of the Chairman's overseas tour and also of that made in countries of the Commonwealth by the Director of the Bureau.

The visit to the Station of members of the Royal Society in June was a gratifying expression of the esteem in which the Station's scientific work is held.

The Committee would like to take this opportunity of congratulating Sir William Slater, Secretary of the Agricultural Research Council, on the honour of knighthood conferred on him by His Late Majesty, King George VI.

During the year plans for the long-overdue extension of the main laboratory buildings have taken first place in the Committee's thoughts. Throughout we have had the support of the Agricultural Research Council and the Ministry of Agriculture for the proposals and we look forward to laying the foundations of the new buildings during 1952.

Although he will not be handing over to his successor until the end of December, the Committee greatly regret to report the impending retirement of Mr. C. T. Royle, Secretary of the Station since 1933. An appreciation of his unobtrusive but unremitting labours throughout these eighteen years will be found in the Research Report. We wish him every happiness in his retirement and hope to see him frequently at the Station.

Again, despite poor weather, we harvested good fruit crops ; but the fall in market prices and consequent drop in returns for our produce emphasized still further that we can no longer expect the income from the Farm to carry the heavy cost of the ever-increasing amount of field experimentation in progress.

Governing Members.

Towards the end of 1950 the Chairman left England for a world tour of fruit-growing areas, during which he visited South Africa, Australia and New Zealand, and the United States. Although he was travelling in a private capacity, Mr. Neame commented, on his return, on the gratifying reception he had received, as Chairman of the Research Station, wherever he went. One direct result of his tour has been an application on behalf of an experienced research worker in New Zealand to come to East Malling as a postgraduate research student in 1952.

During Mr. Neame's absence, Professor V. H. Blackman acted as Chairman and took the chair at the March meeting of the Executive Committee.

In June, the Governing Body completed its three-year term of office and, as is inevitable on these occasions, we had to say goodbye to some of its members, while we welcomed those appointed in their places. After twenty-two years as the representative of the East Sussex County Council, Mr. E. S. Attrell retired and his place will be taken by Mr. D. Curzon Lewis of Crowborough. Dr. Otto L. Shaw also retired, and Major A. R. Pym has been appointed as the third representative of the Kent County Council in his place. Mr. H. A. Haile was nominated to replace Mr. E. U. Bloor, who had represented the Central Headquarters of the National Farmers' Union since 1947.

Of the representatives of the Kent N.F.U., Mr. W. Rodney Wilson and Mr. E. W. Gaskain retired, though the latter continues his association with the Station as one of the Trustees of the Development Fund. Mr. Raymond D. Wickham, who is one of the new representatives, is, of course, no stranger, having previously been elected to represent the East Malling Association ; nor is Mr. C. L. Newitt, who has played cricket for the " Members " against us since the early days of the match. Mr. A. M. Bear of Hailsham replaces Mr. Wickham and, with Mr. W. P. Seabrook, now represents the Association.

We thank all those who have retired for their valued services. The new Governing Body will serve until the Annual General Meeting in 1954.

The Development Fund.

The Trustees of the Development Fund met in November, 1950, under the Chairmanship of the Earl of Selborne. At the meeting the sale of Montcalm to the Ministry of Works was reported. This property in Maidstone, together with the adjoining Fowden Hall, was bought by the Trustees with a view to conversion into a staff hostel. This project was found subsequently to be impracticable ; Fowden Hall has been let on a long lease and, now, Montcalm has been satisfactorily disposed of.

Committees.

Following the re-nomination of the Governing Body, the Executive Committee and Sub-Committees were appointed. Mr. T. Neame was unanimously re-elected Chairman, with Professor V. H. Blackman, Vice-Chairman, and Mr. J. W. S. Mount, Chairman of the Finance Sub-Committee.

At the first meeting of the new Executive Committee in October, the following were again co-opted to serve on the Committee for three years—Sir Edward Salisbury, Sir Albert Stern, Professor F. G. Gregory, and Captain R. Wellington.

The usual quarterly meetings of the Executive and Finance Committees were held, Professor Blackman presiding at the Executive during the Chairman's absence abroad. The Chairman of the Building Sub-Committee (Mr. J. F. Towner) carried out his annual inspection of Station buildings to decide what repairs and renewals were to be undertaken during the year ; he reported to the Executive Committee in March on the extensive work carried out by the maintenance staff during the previous year. Mr. W. Alexander, Chairman of the Farming Sub-Committee, inspected the experimental farm and gave valuable advice to the Farm Supervisor. Although it was not necessary to call a meeting of either of these Sub-Committees, we are grateful for the real help given by the members and, in particular, by the two Chairmen. The Plant Prices Sub-Committee met as usual in July with Mr. W. T. Edmonds in the chair.

Two special Sub-Committees, the first to advise the Director concerning the proposed laboratory extensions and the second to consider plans for the sports pavilion, also met during the year.

Laboratory Extensions.

During the year both the Committee and members of the senior staff have given much thought to the plans for the extension of our laboratory buildings. Last year we detailed the temporary expedients carried out to make the best use of existing space and were able to state that Messrs. Lanchester and Lodge had been commissioned to draw up plans for new buildings for submission to the Agricultural Research Council and the Ministry.

The plans include new wings for both the E.M.B. and Manwaring buildings, and it is proposed to adapt the old N.F.U. building, which would be vacated by the Biochemistry Section, for other purposes.

The draft plans were duly submitted and we are glad to report that the Ministry of Agriculture has approved them in principle and that the Treasury agreement was obtained for the preparation of final plans and submission of tenders. This has enabled us to undertake detailed planning of the new wings and, although at the time of writing we are still awaiting final sanction for a start to be made, there is as yet no reason to anticipate that this will not be forthcoming.

A great deal of detailed work has been put in by all the Sections concerned in consultation with the architects. We should particularly mention Mr. Littlehales' good work in ascertaining the needs of the research workers and making clear to the architects innumerable matters concerning them.

The Farm.

In Section I of the Research Report will be found a description of the range of experimental greenhouses. The new virus houses, to which allusion has been made in previous Reports, were completed in December, 1950, and were fully used for the first time during the ensuing season. A coal yard was added during the year so that supplies can be obtained in the summer and stored properly until required. Three dedutchable houses were provided by the Festival authorities for use in the preparation of plants for exhibition on the South Bank ; we may add that, since the close of the Exhibition, these have been permanently acquired by the Station.

Last year we alluded to the topographical survey of the Station that was being undertaken by Mr. G. E. Smith of the Survey Section of the Ministry of Agriculture. He has now provided us with a series of maps at a scale of 50 ft. to 1 in. with contours at 3 ft. intervals.

During this year Mr. B. S. Furneaux agreed to undertake the preparation of a map showing the varying soil series over the farm. When completed, these two maps will be invaluable both in the accurate plotting of former and existing experiments and in the planning of new ones.

It may be remembered that before the war the Ministry of Transport had under consideration a new arterial road to link up with the Maidstone by-pass. Despite attempts to get the plans altered to avoid the Station's property, it then seemed inevitable that the new road would cross the Bradbourne land to the north of the house, cutting off about twenty acres, north of the road, from the rest of the farm. This project was shelved with the outbreak of war, though we had to plan the Larkfield plantation in 1945 to accord with the proposed route.

The project has again come under consideration during the past year. Bearing in mind the very adverse affects of such a road on the farm and the experimental work in progress, an amended route has been proposed to the Ministry of Transport that would carry the road rather further north, thus avoiding both the valuable area that has now been planted up for frost experiments and the present farm buildings. While the prospects of the road being built seem remote at present, it is vital that when it does come there shall be as little disturbance as possible, especially in view of the extreme shortage of land on the farm and in the neighbourhood. Negotiations to that end are still in progress.

Plans for the erection of a new shed for the use of farm workers on Church Fields have been approved. The old Ferguson tractor has been replaced. The draining of the bullock yard has been improved.

Wrought iron gates have now been added to the new entrance from East Malling village.

Buildings.

The various schemes for the housing of members of the farm and research staff were completed in December with the occupation of the last two houses on Church Fields, a photograph of which appeared in the Research Report for 1950. The Station and the Association now own a total of thirty-five residential properties, which accommodate the Director and seventeen married members of the research staff, fourteen single members of the research staff and postgraduates, at the Grange, and eighteen married members of the farm staff. Most of this accommodation has been acquired or built since 1945 ; while it is still very difficult to obtain houses in the neighbourhood and, in particular, lodging accommodation for younger staff and plantation assistants, the satisfactory conclusion of the Committee's plans has made a real contribution to the housing problem and thus to the good of the Station's work as a whole.

The five-year programme for the maintenance of our buildings has gone steadily ahead. Perhaps the most noticeable improvements have been effected in Bradbourne House, wherein repairs and redecorations, postponed since 1940, have now been carried out in many rooms, including the whole of the ground floor except for the Great Hall. In addition, routine painting and repairs have been carried out in the laboratories, the farm buildings and the Bradbourne stable block.

Sports Pavilion.

Great progress has been made towards the building of a Pavilion on the Sports Ground for the benefit of cricket, tennis and hockey players. Following a discussion at the Executive Committee, Sir Albert Stern made a very generous donation to start a fund to raise the necessary money to cover the cost, while Mr. Raymond Wickham who, it will not be forgotten, has often captained the Members' team in the annual cricket match against the staff, also generously offered to provide architect's plans for a suitable building. Further, Mr. Wickham with Mr. W. P. Seabrook have jointly sponsored an appeal to Members and other friends of the Station, which up to the time of going to press has succeeded in raising the magnificent sum of £1,676 15s. 6d.

The interest of the staff in this is referred to later in this Report and, besides saving the considerable sum of £310 3s. 10d. from the annual grants for staff amenities from the Association, they responded to the appeal of the Staff Representative, supported by the secretaries of the various Clubs, by donating a further sum of £304.

The success of these efforts by Members and by staff has made it possible to go ahead and the architect, Mr. Cecil Burns, has been instructed to prepare final plans ; building will start as quickly as present conditions allow. Sir Albert Stern has made a further gift of a " parliament " clock that we intend to incorporate in the building.

Annual General Meeting.

The Annual General Meeting was held at Bradbourne on the 21st June, 1951, under the Chairmanship of Mr. T. Neame.

Dr. F. R. Tubbs, in presenting the Annual Reports for the year October, 1949, to September, 1950, surveyed the work which had been accomplished, and reported on the progress made in the preparation and submission of plans and estimates for the proposed laboratory extensions to the E.M.B. and Manwaring Buildings. He acknowledged the interest and practical assistance of the Association in all aspects of the Station's work and in the welfare of the staff.

In proposing their adoption, Dr. E. J. Maskell stressed the importance of the close collaboration between the Station and the grower of which there was so much evidence in the Reports.

Sir Albert Stern seconded the adoption and congratulated the Director and staff on the work that had been done. He referred to the urgent need for a Pavilion to facilitate sports activities for the staff, and hoped that the appeal that had recently been launched would be well supported.

The Reports were unanimously adopted.

The Balance Sheet and Accounts for the year ending 30th September, 1950, were presented by the Finance Chairman, Mr. J. W. S. Mount. He referred to the expenditure necessary to maintain the experimental farm, some £45,288 against an income of £35,344, leaving an amount of £9,944 to be met by the Ministry of Agriculture.

Mr. W. P. Seabrook proposed the adoption of the Accounts and complimented the Finance Chairman on his report ; the proposal was seconded by Mr. W. Talbot Edmonds. The Balance Sheet and Accounts were unanimously adopted.

Major A. R. Pym proposed the re-election of the auditors, Messrs. J. Dix Lewis, Cæsar, Duncan & Co., for the ensuing year ; this was seconded by Mr. A. Day, and carried unanimously.

Finance.

Summaries of the main accounts for the year 1950/51 are appended.

The Research Account.

The large increase in the grant from the Ministry reflects mainly increments in staff salaries and new appointments. Ever-rising costs entailed increases also in laboratory and general maintenance, though strict economy kept these to a minimum.

A new item is the contribution from the staff canteen ; this is made up of a 2 per cent levy on gross takings and a fixed sum towards the cost of heat and light used in the canteen.

Expenses incurred for the South Bank Exhibition were refunded by the Festival authorities.

The Supplementary Accounts.

The grant for the Scottish Raspberry Investigation continued until the end of March, when the new Scottish Research Institute was formed. The grant towards the cost of statistical assistance for the N.A.A.S. Experimental Horticulture Stations covered a five-month period until the new arrangement was placed on a permanent footing in October, 1951.

The Experimental Farm Account.

Last year we alluded to the high cost of the Experimental Farm and the growing inadequacy of the receipts from the sales of produce to meet it. This was further demonstrated this year for, although there was only a small increase in total expenditure in spite of generally rising costs, income dropped still further. This was due partly to the wet, sunless season that decreased the quality and thus the value of both fruit and arable crops and partly to a general fall in market prices for all but the best fruit ; the poor demand for rootstocks and worked trees also seriously reduced receipts for nursery material. The resulting deficit represents the present-day cost of field experiments, many of which can, by their nature, not be expected to produce a direct financial return.

Research Account.

1st October, 1950, to 30th September, 1951.

Expenditure.	£	s.	d.	Income.	£	s.	d.
Salaries, National Insurance and Superannuation ..	77,352	5	0	Grant from Ministry of Agriculture	98,799	17	5
Laboratory Expenses and Equipment	8,694	6	10	Contribution from East Malling Association	1,485	0	0
General Maintenance Expenses	14,276	3	3	Contribution from Canteen ..	76	0	0
Festival of Britain	462	0	8	Sundry Receipts	747	5	0
Balance, being excess of Income over Expenditure	785	7	4	Festival of Britain	462	0	8
	£101,570	3	1		£101,570	3	1

Supplementary Accounts.

(Including Special Grants from the Agricultural Research Council.)

Expenditure.	£	s.	d.	Income.	£	s.	d.
Raspberry Investigation in Scotland	2,047	10	0	Balance brought forward, 30th September, 1950	245	17	2
Pettar ACE Red Spider Investigations	564	4	8	Raspberry Investigation in Scotland	2,137	12	11
Statistical Assistance to N.A.A.S.	658	15	0	Pettar ACE Red Spider Investigations	787	10	0
Kent Fruit Soil Survey	41	12	7	Statistical Assistance to N.A.A.S.	725	0	0
Balance carried forward	583	17	10				
	£3,896	0	1		£3,896	0	1

Experimental Farm Account.

1st October, 1950, to 30th September, 1951.

Expenditure.	£	s.	d.	Income.	£	s.	d.
Farm Wages	26,675	7	6	Sale of Produce and Crops	24,191	14	8
Farm Manures and Sprays	3,317	1	6	Sale of Livestock	2,522	1	8
Livestock	1,782	4	0	Sundry receipts	2,137	19	10
General Farm Expenses, Implements and Repairs	14,849	15	3	Balance being excess of Expenditure over Income	17,772	12	1
	£46,624	8	3		£46,624	8	3

The East Malling Research Station Association.

The continued interest and support of the Association is, as always, an encouragement both to the Committee and the staff. Although the increase in numerical strength of the Association that we referred to last year has not been quite maintained, the attendance at Open Days is evidence that the interest has not diminished. We have had an exceptional opportunity of gauging it this year in the ready response to an appeal by the representatives of the Association for financial support for the Sports Pavilion—something that has apparently little direct bearing on research, but that will materially add to the amenities provided for the staff. The number of Fellows, Members and Associates at the end of September was 2,057.

In the accounts that follow, further substantial contributions to the cost of the Church Fields houses and of necessary repairs and redecoration at the Grange will be noted, as will also the grant towards research of £1,485. Expenditure has again exceeded the income from subscriptions and interest on investments, but the bank overdraft is amply covered by the Association's capital holdings.

The East Malling Association Income and Expenditure Account.

1st October, 1950, to 30th September, 1951.

Expenditure.	£	s.	d.	Income.	£	s.	d.
Bank Overdraft, 30th September, 1950	3,665	5	10	Subscriptions and Donations	4,415	12	3
Research Grant	1,485	0	0	Sale of Leaflets and Spray Calendar	36	16	3
Evening Class Fees	3	0	0	Interest on Investments	148	0	0
General Expenses	716	12	7	Bank Overdraft, 30th September, 1951	4,387	4	0
Staff Recreation	250	0	0				
Sundry Grants :							
Staff Houses (*Church Fields*)	1,550	13	2				
Grange Repairs	1,317	0	11				
	£8,987	12	6		£8,987	12	6

Investments and Freehold Properties held by the Association.

at 30th September, 1951.

	£	s.	d.	£	s.	d.
Investments at Cost :						
£2,000—2½% National War Bonds				2,000	0	0
£3,720—2½% Consols				3,000	0	0
Freehold Properties at Cost :						
"Fircroft", Larkfield	2,577	16	5			
"Grange", East Malling	6,214	17	2			
31, Buckland Lane, Maidstone	2,567	1	2			
59, Grace Avenue, Maidstone	2,299	6	0			
				13,659	0	9
				£18,659	0	9

Association Rentals Account.

1st October, 1950, to 30th September, 1951.

Expenditure.	£	s.	d.	Income.	£	s.	d.
Rates, Schedule "A" Tax, Repairs, etc.	220	19	10	Cash at Bank, 30th September, 1950	277	3	0
Cash at Bank, 30th September, 1951	311	0	4	Rents	254	17	2
	£532	0	2		£532	0	2

Members' Days.

It is becoming increasingly difficult to find enough suitable subjects to enable us to arrange frequent Members' Days throughout the year. Three days for Members and Associates were held during the year under review.

On the 22nd November, 1950, an indoor meeting was held when members of the Biochemistry Section described their work on plant analysis and nutrition. Their talks were illustrated by numerous demonstrations of the way the experiments are actually conducted. This meeting was attended by some 120 Members.

Incompatibility between rootstock and scion variety formed the subject of the Members' Day on the 17th May, 1951. The programme in the morning consisted of talks on recent research on rootstock/scion incompatibility, chiefly of pears and plums. In the afternoon the 150 Members who attended were taken on a tour of the plantations to see examples of various incompatibilities in the field and practical methods of overcoming certain of these incompatibilities.

A day on plums and gages was held on the 23rd August, 1951. This was a field day and the experiments discussed dealt with rootstocks, varieties, pruning and diseases, including virus diseases. The attendance for this day numbered about 140.

Amos Memorial Lecture.

The third Amos Lecture was delivered by Sir Edward Salisbury, V.P.R.S., on the 26th October, 1950, his subject being "The fruit tree and its environment". It was held in the beautiful surroundings of the new Swanley Hall at Wye College, by kind permission of the Principal, and was attended by over 300 fruitgrowers, scientists and students. At the close of his stimulating survey of the subject, Sir Edward dealt ably with a variety of questions. An interesting tour of the horticultural department of the College was arranged by the Principal to precede the lecture.

As we write, we may add that the fourth lecture was given by Mr. T. Neame at the Research Station in November, 1951.

Staff.

At a Station whose work depends so much on continuity, it is once again pleasant to record few changes among the senior research staff at East Malling, though it was with something of a shock that we learnt just after the end of the year under review that, as already recorded, Mr. C. T. Royle would be retiring at the end of 1951. However, one particular branch of our activities, the Scottish Raspberry Investigation at Dundee, the work of which has been guided by Dr. R. V. Harris since its inception in 1942, has now passed from our care, and Dr. C. H. Cadman, Dr. C. A. Wood and other members of the staff in Dundee have formed the nucleus of the new Scottish Horticultural Research Institute, which came into being on the 1st April with Dr. T. Swarbrick as Director. We are glad to report, however, that our close connections with the researches on raspberries, both pathological and cultural, are by no means likely to be broken thereby and we wish the new Institute every success and prosperity.

The Staff Council re-elected Mr. R. J. Garner as its representative on the Governing Body in September. We take this opportunity to congratulate him on the award of the honorary degree of Master of Science by Reading University.

There have been few changes in the staff of the Pomology Section. Miss M. J. Taylor, who had been assisting Mr. Grubb in his raspberry breeding work for nearly two years, left with our good wishes to be married in August, and was succeeded by Miss E. Keep.

We congratulate Miss E. M. Glenn on the award of the Grenfell Medal by the Royal Horticultural Society for her paintings of walnuts.

The Statistics Section reports the appointment in January of Mr. G. H. Freeman to succeed Mr. J. Taylor, who had departed for the Sudan the previous year. In February, Mr. G. F. W. Buckland, who had taken over the Section's biometric field studies, left to start practical farming and it was not possible to replace him until the end of the year, when Mr. G. E. Davies, who has had experience of field experiments with vegetables at Manchester, joined us to carry on this work.

As reported elsewhere, during the year the Section acquired new responsibilities for the design and statistical interpretation of fruit trials on the N.A.A.S. Experimental Horticulture Stations. In May, Mr. G. M. Jolly came to us from Rothamsted, under an Agricultural Research Council grant, to gain experience in the special requirements of fruit experiments. We were glad to welcome him as a permanent member of staff at the end of September, and he will be taking a major part in the future duties that arise from this new commitment.

The Physiology Section was strengthened in February by the appointment of Mr. D. H. Maggs. He will work mainly on growth relations in fruit trees.

Major S. G. Thompson retired from the Biochemistry Section at the end of March. He first joined the Section in a voluntary capacity in 1938 and during the next two years played a considerable part in the initial development of the flame method of spectroscopy, rendering particularly valuable service during Dr. Roach's absence in South Africa in 1938-39. After a short break, he rejoined the Section in 1941 on a part-time basis, later becoming a full member, and was particularly associated with the Station's experiments on the diagnosis and cure of trace-element deficiencies in fruit plantations. We gather that he is already finding plenty to occupy him in his retirement.

As anticipated in last year's Report, Dr. W. G. Keyworth was granted a year's special leave in November to take up a temporary appointment as research plant pathologist at the Agricultural Experiment Station, New Haven, Connecticut, his passage to and from the United States being assisted by a Fulbright Grant. During the year he was also awarded a travel grant by the Leverhulme Foundation. Having to assume family responsibilities upon the sudden death of his father, Mr. John Paine tendered his resignation as from the beginning of May, but continued on a part-time basis until the end of December. He was thus able to give valuable assistance and guidance to his successor, Mr. J. T. Legg, who was appointed in April to work on virus diseases of fruit and, especially, hops. The virus disease team was further strengthened in the same month by the addition of Miss E. C. E. Ellenberger. Dr. A. Kozlowski, who had been working in the Pathology Section on soil-borne diseases since 1949, left us to join his relations in America in October, 1950.

Mr. A. F. Posnette was given special leave in January to pay a short visit to the West African Cacao Research Institute, Tafo, to advise on work with which he had been previously associated. Since his appointment in 1946, Mr. D. S. Kirkham has been attached to the Plant Protective Chemistry Section. His present work, however, is more conveniently treated as part of the programme of the Plant Pathology Section, and the former arrangement has now been terminated. Apart from specialist work, the general supervision and recording of trials initiated by the Pathology, Entomology

and Plant Protective Chemistry Sections have been in the charge of Miss M. Bennett for several years. Recently, however, these trials have been rapidly increasing in number and, in October, Miss P. Webb was appointed to assist Miss Bennett in this essential part of these Sections' work.

We warmly congratulate Dr. A. M. Massee on the award of the Order of the British Empire in His Late Majesty's Birthday Honours. Dr. Massee's entomological work is so well known to Members that we need make no further comment here, save to remark how pleased we are that its value and importance has thus been recognized.

In succession to Miss Winton who, it will be recalled, resigned her post in the Plant Protective Chemistry Section at the end of 1949 for domestic reasons, Mr. R. P. Tew, who had formerly worked with the Fungicide and Insecticide Research Co-ordination Service, was appointed in February. He will also perform the duties of technical chemist on problems of formulation.

The Farm staff has remained unchanged, but we should like to mention specially this year the enormously valuable contribution that Mr. Villiers and his assistants in the plantations, the nurseries and the greenhouses make to our researches. However much the scientific staff may do, the success or failure of their experiments depends on the good culture of their plants, often under most exceptional conditions, and this may not always be fully realized. The happy collaboration of the specialist research workers and those who grow their plants for them is something we value very much.

This year we have included in the Staff List those members of the Farm staff who have served the Station continuously for twenty-five years or more. The senior among them, Mr. C. Bates, who has been fruit foreman for many years, retired at the end of the year. We are glad, however, that he will still be with us, having taken over the charge of the Farm Store. He is succeeded by Mr. W. Henson, whose father was one of the small band of Farm workers who started work in Great East under Mr. Amos in 1913.

During 1951, we undertook rather an unusual task in the production of exhibition plants for the South Bank Exhibition. Mr. R. Abel-Smith, formerly one of our plantation assistants, joined the greenhouse staff for eight months to take charge of the plants and organize their transport to London.

There are now three Senior Assistants and some forty-five Assistants (Scientific) on the staff, and it is, therefore, not very surprising that changes are rather frequent. In the Pomology Section, Miss J. W. Kemp (March), W. J. Usborne (April), and Miss H. J. Inkpen (September) came, while Miss G. P. R. Hills left in September. In the Statistics Section, Miss J. M. Fuller came in April to replace Miss V. V. Fry, who left to be married in May; Miss J. A. Dolding came in May. A. H. Gregory (I.C.S., Physiology Section) came in December, 1950, to replace B. F. J. Barrett, who was called up for National Service the following month. J. Larking rejoined the Physiology Section in July. In the Biochemistry Section, Miss M. Acott rejoined in April, and Miss P. A. Newman (September) and Miss E. M. H. Wilson (October) also came. Miss F. M. Woolgar (March) and Miss S. M. Lloyd (September) left. Miss A. M. Spary (July) replaced Miss B. Milton (May) on the Imperial College Staff. Mr. N. Harrison and Miss H. M. Grover joined the Pathology Section in April, and, in the same month, Miss G. W. Goodier was added to Miss Bennett's recording team. In the Plant Protective Chemistry Section, S. R. B. Solly left in October, 1950, and was replaced first by D. Tuersley (December-June) and later by R. S. Large (October, 1951); Miss R. H. Bishop (September) came to replace Miss J. I. Brackenbury who left in June. Mrs. J. M. Sheath and P. Abery came as temporary Assistants during July and August. Miss D. Simmonds

(January-September) came as Assistant to Mr. Yoxall Jones in the Photographic Studio.

Miss L. M. Read, Personal Secretary to the Director, left to take up other work in September. Miss Read first came as Secretary to Sir Ronald Hatton in September, 1945, and gave valuable service throughout an arduous transitional period.

Among the clerical staff, Misses J. D. Martin and J. M. Parsons of the Accounts Office resigned in November ; the following also left : Misses D. Clegg (October, 1950), P. H. Westacott (December), J. Bates (March), D. M. Ansell (June), and M. E. Wedgbury (July). Their places were filled by Misses D. L. Card (October, 1950), B. J. Gosling (November), C. R. Westwood (January), P. Hughes (July), and Misses P. M. Lincoln, G. E. Wright and V. Theobald, all of whom came in August.

There have been no changes in the scientific staff of the Bureau, but we should like to mention specially Mr. G. K. Argles, Assistant Director, who carried on so efficiently during Mr. Akenhead's absence abroad, maintaining the traditional good relations between the Station and Bureau staffs. Mr. Akenhead returned in June, having visited South Africa, Australia, New Zealand and Canada, and we have had many reports of the success of the visits he made. Miss J. Cranham joined the clerical staff of the Bureau in June.

We again offer a hearty welcome to all those who have joined us during the year and extend our good wishes to those who have left.

In the past we have only mentioned the Chairmen of the various Committees who assist the Director in administrative matters. These have remained unchanged. This year we would mention the names of the Secretaries, who also put in much hard work on their several Committees. Miss E. C. Thompson has now been Secretary of the Staff Council since October, 1948. The Secretaries of other Committees are Mr. S. R. Ball (Library), Mr. M. M. Macneill (Greenhouses), Dr. G. H. L. Dicker (Workshops), Mr. H. W. B. Barlow (Photographic Studio), and Dr. S. C. Pearce (Canteen). We thank them all for their valuable contributions to the smooth running of the Station's work.

Social and Athletic Activities.

During the year the Sports Pavilion has been very much in the minds of all those interested in athletic recreation. Thanks to the generosity of our Members the long-hoped-for Pavilion is now definitely nearer attainment. The personal donations of the Staff and contributions accumulated towards this end from the Staff Amenities Grant, which the Association repeated in 1950-51, have already been commented upon.

Miss B. F. Seymour was again elected Social Secretary and undertook much work in the organization of events of interest to the whole staff. The Christmas Party was held at Bradbourne on two consecutive nights, 18th and 19th December. It again took the form of a variety entertainment and "stand-up" supper, followed by a dance arranged by members of the Dance Club. Despite wintry weather, it was well attended. We wish we could accommodate everyone on the same night, but see no likelihood of being able to do so at present.

On the 28th May a party of some two hundred members of farm and research staff and their families went by special train to visit the South Bank Exhibition. All the arrangements worked smoothly and even the weather behaved well.

On the 11th June a talk on the history of the Twisden Family and tour round Bradbourne house were arranged at the request of members of staff. Some fifty attended, including many who had joined the Station in recent years.

Between eighty and ninety children—we cannot be more exact as they were never still—came to the Party on 28th July, which was held for the second year at Bradbourne in glorious weather. No one fell in the lake, and the conjuror, the donkey rides and, by no means least, the Director's tea were enormously enjoyed by all our small guests.

The " Members' Match " was again the highlight of the cricket season, although we had to concede victory to the visitors. During the season fourteen matches were played, including those against teams from Wye College and the Wisley Gardens.

The newly-formed Hockey Club got off to a good start, playing four matches as well as practice games. The Tennis Club now has a weekly Club evening—a popular innovation—and played two matches, but the weather was against them this year. The Table Tennis Club continues to flourish, having now thirty-six members ; they played ten matches and won six of them. The Boat Club now has sixteen members. Dancing is very popular and we now have a Folk Dance Club that met seven times and held a summer party at Bradbourne. As we write, we hear rumours of square-dancing —but that is for next year's Report. From the proceeds of the Dance at Bradbourne in November, a further £13 was contributed to the Pavilion Fund. Eleven play readings were arranged and fourteen gramophone concerts held. This year the latter Club's programme included one " live " concert. A small Photographic Club has been formed, whose members have the privilege of using the Station's Studio. The Chess Club has thirteen members who arrange games as convenient.

The Garden Club held another successful show, which included two hundred and eight very creditable entries, on the 15th September. Mrs. Akenhead opened the show and gave away the prizes. Bulk buying is still one of the functions of the Club that its members value very much. A small party visited Roydon Hall in the summer, by kind invitation of Captain Cook, who also gave a most interesting talk on the history of the house and the Twysden family. Since the portraits of several of those who lived at Roydon hang in the Great Hall at Bradbourne, this was a particularly interesting afternoon for those who were able to go.

It was a fortunate circumstance that Mr. Akenhead's visit to the Irrigation Station, Griffith, New South Wales, coincided with the arrival of the cold water drinking fountain that the staff have presented to that Station, as a memento of their kindness in sending food parcels in recent years ; and he was thus able to present it on our behalf. We have received a photograph of the Griffith staff and have despatched one of our own staff in return. We hope the connection between the two Stations will long be remembered.

Postgraduate Students.

During the year some changes have been made in the rules for the acceptance of students. We now only accept (1) postgraduates, usually candidates for higher degrees, who come here to do a long-term piece of research, usually for two or more years ; (2) experienced research workers who come here for shorter periods to study our methods or carry out special short-term investigations that can only be done here ; (3) science students or graduates studying at Universities in the United Kingdom, who may be accepted as temporary field recorders during vacations. These changes are necessary

because of the lack of bench space in the laboratories and the many preoccupations of the research staff who cannot afford the time to supervise those who come here merely to learn horticulture.

Candidates for Higher Degrees.

Sixteen applications were received, but few had the necessary qualifications to justify acceptance. There were in October, 1951, three full-time postgraduate students registered for Higher Degrees, two in the Pomology Section from the United Kingdom and Afghanistan, and one in the Physiology Section from Canada. In addition, eight members of the research staff are registered. It should be realized that the University now insists on a minimum of two full years study for the Ph.D. degree, and that it is only the exceptional student who can expect to take his degree in that period.

Short-term Research Students.

Six applications were accepted, and although some of these can hardly be regarded as students, they are grouped together here for convenience.

We were very glad to welcome Dr. F. M. Turrell of the Riverside Experimental Station, California, who came here for two months in the summer to make a special investigation in the Physiology Section on the relation between the buffering capacity of leaves and their resistance to sulphur injury. Mr. R. Bovey, newly-appointed to the Federal Research Station at Lausanne, spent two months from the 1st May in the Pathology Section studying strawberry virus diseases. In the same Section, Dr. Z. Volcani of the Agricultural Research Station, Rehovòt, Israel, worked on bacterial diseases during August and September. At the request of the Colonial Office, Mr. M. F. H. Selby from Nyasaland spent a month with the Statistics Section in February; and Miss W. de Brouwer from the Proefstation voor Groenten-en Fruitteelt onder glas, Naaldwijk, Holland, assisted in work on the predators of the Fruit Tree Red Spider in Essex during August. Mr. S. K. Dutta of the Tocklai Experimental Station, Assam, India, worked in the Pomology Section for three months in the late summer and autumn. We thank them for their assistance and hope that they benefited by their stay with us.

Temporary Recorders.

The response to the scheme to enable students to work here as temporary field recorders was, in this second year, rather overwhelming. Forty-six applications were received, but vacancies permitted us to accept only fourteen, six with Pomology, three each with Physiology and Pathology, one each with Entomology and Plant Protective Chemistry. Students were from the Universities of London, Oxford, Cambridge, Reading, Wales, Durham, Leeds, Liverpool and Exeter. Most of them appreciated fully that they were accepted to assist full-time with the summer recording of our field experiments and, though a few may have found some of the work tedious, good reports have been received of all of them and we hope the experience has been useful to them. We hope the scheme will become a permanent feature of the Station's activities.

Plantation Assistants.

There is still a waiting list for vacancies in the plantation assistants team, which now consists of five girls and eight men. The work has proceeded along normal lines, including the winter's considerable planting programme. We are grateful to Mr. A. C. Painter, who again organized the programme of lectures for them during the winter months and to those who contributed to it. Visits made included one to the John Innes Horticultural Institute at Bayfordbury.

Of those who have recently completed the course, W. J. Brown is working in commercial horticulture in North Carolina, D. Bailey has started his own fruit farm in Co. Wicklow, Eire, M. Burdon is growing tomatoes in Guernsey, and P. Pink is helping to run a small fruit holding in this country. A. Merricks has been transferred to Mr. Garner's staff and will be staying on at East Malling for work in the nursery.

After returning to East Malling to take charge of Festival of Britain material (see Staff), R. Abel-Smith has taken a post as manager of a fruit holding in the Cranbrook area.

Staff Discussions.

Staff Discussions were held on seven afternoons during the winter months, two of which were devoted to reports on research visits abroad. On one afternoon Dr. Rogers and Mr. Greenham described their visit to Holland during 1950, when they attended the Congress of Soil Science ; Mr. Furneaux, whom we were glad to have with us, also gave a talk on the fruit soils of Holland which he had explored after attending the same Congress. On another afternoon Dr. Harris told us about the raspberry stocks he had inspected in Scandinavia and the Low Countries ; on this occasion we were privileged to have Dr. Swarbrick with us, just prior to taking up his post as Director of the new Scottish Research Station. Later the same afternoon Miss Glenn described the French walnut industry, centred around Grenoble, emphasizing the special propagation methods that were being applied there successfully.

Special aspects of our research programme were also dealt with, the Physiology Section contributing a full afternoon on abscission and physiological aspects of scion/rootstock relationships. Other subjects discussed were the Fruit Tree Red Spider Mite ; inorganic plant analysis ; rootstock/scion incompatibility ; and virus diseases of tree fruits.

Research Tours.

Dr. W. S. Rogers paid a short visit to the Research Institute at Wädenswil early in the New Year to see the Laine fog producing apparatus for frost protection.

During his stay in the United States, referred to above, Dr. W. G. Keyworth was the recipient of a travel grant from the Leverhulme Foundation with the aid of which he was enabled to study research work in progress on Verticillium wilt diseases of plants, in particular, and hop diseases in general. In the course of his tour he visited Stations in Indiana, California, Oregon, Washington and Wisconsin ; he also crossed to Vancouver Island to visit the Dominion Laboratory of Plant Pathology, Saanichton, B.C.

In connection with the Ninth International Congress of Entomology at Amsterdam, which he attended, Dr. G. H. L. Dicker visited a number of Institutes in Holland where

entomological research is in progress. This tour was made with the assistance of a grant from the Agricultural Research Council.

Dr. W. A. Roach paid unofficial visits to several Stations, doing preliminary work on trace-element deficiencies, during a holiday period in Spain.

At home, members of staff visited other Research Institutes, N.A.A.S. Experimental Horticulture Stations, particularly Luddington, and inspected N.A.A.S. experiments in the field on numerous occasions. Miss E. M. Glenn, anticipating the time when our walnut grove will be in full production, went to Essex to see a walnut drier. Dr. R. V. Harris and Mr. R. J. Garner toured blackcurrant areas in East Norfolk in June to study methods of propagation and to locate sources of material for proposed experiments here.

Collaboration.

Last year we alluded particularly to the collaborative work with the newly-established N.A.A.S. Experimental Horticulture Stations. Since then the work has progressed and our commitments have extended. Fruit plantings at Luddington are going ahead, despite a most unfavourable winter during 1950-51, and plans are being prepared for the Station at Efford, near Lymington, Hants, and for two Stations at Stockbridge House, near Selby, Yorks., and Fairfield, near Preston, Lancs., which will also carry out fruit experiments, though these are not their primary concern. Before the end of September, it had been agreed that our Statistics Section should shoulder responsibility for the design and statistical interpretation of all fruit experiments on these Stations and, as noted above, the staff has been augmented for the purpose. Members should realize how big an expansion in our activities this development entails. The Experiment Stations themselves are distributed all over England, and experiments may be initiated by any of the five collaborating Research Institutes represented on the Fruit Working Party, of which Mr. T. N. Hoblyn acts as Convenor, or on the representations of N.A.A.S. Provincial Horticultural Experiments Committees. Each experiment must be planned several years ahead and arrangements made for the supply of plant material. Once planned and planted, the records required must be defined and the collection, tabulation and statistical examination of the data arranged for. Frequent visits will be necessary to other collaborating Institutes to clarify the objects and proper conduct of each experiment with the research workers concerned, and to the Experiment Stations themselves to see that the trials are correctly carried out and recorded. For this latter purpose East Malling has agreed to train a number of recorders for the Ministry who will eventually be stationed on one or other of the experimental farms ; we may add that three of these have now started a year's course of training here.

If we may anticipate, it should be stated further that this is not the sum total of these new commitments and, since the end of September, negotiations have been in progress towards our further participation in the design and interpretation of other N.A.A.S. fruit experiments. While we welcome the opportunities that these developments will bring, it will be essential to ensure that they add to and extend our researches without interfering with the main research programme at East Malling.

Apart from these developments, several Sections report continuing and extending collaborative work with N.A.A.S. Officers. Examples are the Pomology Section's participation in soil management and sward trials in orchards and the assistance

given to the Section from Wye in compost and soil analyses. The Pathology Section also has numerous contacts with the N.A.A.S., e.g. in studies of soft fruit virus diseases, wilt diseases of strawberry, apple mosaic and the control of apple canker and apple scab; all these experiments are in the South-Eastern Province. The Station's interest in the scientific aspects of health certification schemes and in the training of inspectors for fruit tree rootstock certification must also not be forgotten.

The termination of the A.R.C. Scottish Raspberry Investigation at the end of March and the transfer of its staff to the Scottish Research Station, Mylnefield, Dundee, has already been alluded to; here once more we would thank all those who contributed to its success during nearly nine years. The raspberry work will be continued at the new Station and new projects, for example variety and rootstock trials of top fruit, in which we are collaborating, have already been initiated.

These notes would not be complete without reference to the Institute of Plant Phyisology, Imperial College of Science. The collaboration of the Physiology and Biochemistry Sections with members of its staff working at East Malling has, if possible, become even closer during 1951.

The A.R.C.-Pettar-ACE Red Spider Investigations in Essex continued for the eighth season, emphasis being on trials of summer washes and the work on predators. In addition to those others who contribute their share to the success of the work, we must again thank the Principal of the East Anglian Institute of Agriculture for facilities in the Writtle orchards; the Field Laboratory is still located at Porter's Farm, Great Braxted. During the summer all those collaborating gathered at Writtle for the third Field Day, during which the results to date were described and the experimental work was inspected in the plantations.

In the frost investigations we have had the benefit of collaboration or discussions with several Research Institutes, notably the National Institute of Agricultural Engineering, the Meteorological Office, the Fuel Research Station, the National Institute of Medical Research, the National Physical Laboratory and Wye College. We also have to thank a number of firms and individuals for the loan of apparatus and equipment.

We should also mention specially the work on trials of weed-killers in fruit plantations in which we have collaborated with the A.R.C. Unit of Experimental Agronomy, University of Oxford.

Since fruit research is generally continuous, there are numerous projects still in progress that we have mentioned previously and, if we do not note them specially this year, we are none the less grateful to those who have gone on helping us. One or two new projects should, however, be mentioned.

The Ditton Laboratory, in addition to other joint work, is now collaborating in studies of the influence of pollen variety on fruit development and characters. Plant material for tests of abscission-inhibition properties has been supplied to the Physiology Section by Miss J. Bentley of Manchester University. In the development of machinery for spraying orchards with atomized high concentrate fungicides, the Pathology Section also has had the valuable co-operation of the National Institute of Agricultural Engineering. Dr. K. M. Smith of the Agricultural Research Council Plant Virus Research Unit has made tests on Codling Moth larvæ to determine whether or not they were attacked by virus infection; and the Entomology Section has also collaborated with Dr. M. S. Lacey of the Imperial College of Science in the investigation on "Cauliflower" disease of strawberry.

Looking back twenty years, some dozen instances of collaborative work were mentioned in these notes. To-day, the list is so long that we cannot hope to acknowledge all and certainly not do justice to the importance of even a few of them. Fruit research has become nation-wide. Even now, we have not mentioned the Institutes abroad to whom we have supplied plant material, reports of the behaviour of which are published or reach us through correspondence or personal contact. Occasionally we are ourselves able to see the trials, which may throw new light on our own results at home. This is an even wider aspect of collaborative research and must be of ultimate benefit to all who grow trees for their fruit.

Outside Trials.

If the previous section of this Report tends to become longer each year and this section shorter, it is because so many trials outside the Station have been carried out in collaboration with N.A.A.S. workers and have already been referred to and not because the Station's interests have become more circumscribed. However, there are still many long-term trials in progress that we have alluded to before and we are grateful to the growers who continue to allow us facilities and co-operate in other ways.

This year, for the first time, the frost control observations were extended and for this we have to thank Mr. E. Manwaring who has allowed us to use his orchard at Collier Street for this purpose.

Much pathological research, including work on hop diseases, is still carried out in growers' plantations or hop gardens. The rates of spread of fruit tree viruses are now being mapped in several orchards.

The Entomology Section has to thank growers for facilities on six farms in Essex and has started a trial to test the effects of various fungicides upon the species of beneficial insects and mites inhabiting fruit trees on Mr. G. L. Hooson's farm at Ryarsh, near West Malling. The ACE growers, as well as participating in the Red Spider Investigations, have allowed us to use their packhouse at Galleywood for experiments on the control of Codling Moth in packhouses and apple boxes.

Once again we thank all growers, whether they have been helping us for years past or for the first time in 1951, for their valuable co-operation. The assurance that, when we need to study our problems beyond the confines of the Station, many growers are ready to afford facilities in their own orchards is an immense encouragement to the research team here.

Outside Committees.

The extension of the various collaborative projects in which the Station is interested involves ever-increasing demands for our attendance at the various Committees that control them. Thus there are nine A.R.C. Conferences or Committees, each of which calls for the attendance of from one to four members of staff on one or more occasions during the year. When fruit research is on the agenda, we endeavour to send a representative to the advisory committees of four N.A.A.S. Experimental Horticulture Stations, each of which meets four times a year; and this is additional to the National Fruit Trials, which have also involved much extra-committee work in the search for a suitable farm in Kent, the Fruit Working Party and the various other Ministry of Agriculture committees on which we are represented. All these involve the management

or co-ordination of research or experiment. In addition there are the various scientific or educational bodies on which various members of staff serve. All these outside commitments are symptomatic of the ever-widening scope of horticultural research and, for this reason, we can only welcome them.

Scientific Societies and Conferences.

Prior to the visit of members of the Royal Society to East Malling, the Director was invited to address the Society. His lecture, which was delivered in April before a distinguished gathering, covered the history, organization and main investigations of the Station since its inception.

The Station was represented at the IXth International Congress of Entomology at Amsterdam; the VIIIth International Congress of Refrigeration at London, where Dr. Irena Modlibowska read a paper on frost damage to plant tissues with special reference to fruit plants; the International Congress of Nematology at Rothamsted, where Dr. R. S. Pitcher spoke about his joint work with Mr. J. E. Crosse on the interaction of eelworms and bacteria in causing "Cauliflower" disease of strawberries; and the Cocoa Conference at London.

The annual two-day conference of insecticide research chemists was held at Rothamsted in March and attended by four members of the Plant Protective Chemistry Section.

Dr. Elsie Collyer read a paper on the predators of the Fruit Tree Red Spider Mite at the meeting of the British Association for the Advancement of Science at Edinburgh in August.

Mr. J. E. Goode described some of his work on soil moisture and evaporation calculations at the annual meeting of the British Society of Soil Science, at the Harper Adams Agricultural College, Newport, Salop, in September. Dr. A. B. Beakbane and Mr. A. F. Posnette addressed the Association of Applied Biologists at their summer meeting at Wye, dealing with anatomical structure of roots in relation to tree performance and with tree fruit virus diseases respectively.

At the Conversazione of the Association of Applied Biology in London in July, Mr. A. F. Posnette showed a virus disease of gooseberries and some virus diseases of cherries, Dr. P. W. Talboys demonstrated some of his work on the physiology of Verticillium wilt of hops, and Dr. R. S. Pitcher and Mr. J. E. Crosse showed the interesting association of eelworms and bacteria in producing symptoms of "Cauliflower" disease of strawberries.

Members of staff have attended many other meetings of learned societies and conferences of advisers and fruitgrowers, and in many cases have contributed to the discussions.

Advisory Correspondence.

The records of advisory letters received during the past year show a further slight decrease over previous years. The Scientific Liaison Section replied to 1,355 enquiries, subsequently passing 85 on to the advisory services for further action. Specialist research workers dealt with a further 600 letters, and 120 were passed direct to the appropriate advisory officers. Many enquiries still reach the Station by telephone, but it is impossible to get an accurate record of them; at least 600 were dealt with by the Scientific Liaison Section.

Advisory Visits.

Visits paid during the year numbered 95, of which 61 were made by members of the Entomology Section. This total represents a big reduction, which is accounted for to some extent by the fact that the raspberry investigations in Scotland became a part of the Scottish Horticultural Research Station half way through the year. Often the visits were made jointly with the appropriate advisory officer.

Exhibits.

The contribution of the Station to the exhibits in the Country Pavilion at the South Bank Exhibition deserves a special paragraph. This project was essentially a collaborative one, the Long Ashton Research Station, the John Innes Horticultural Institute, Bayfordbury, and ourselves combining to maintain exhibits of fruiting plants from May to September to illustrate advances in British fruit research. The Exhibition opened with strawberries to illustrate the results of virus research, being followed with cherries, with the emphasis on pollination. This was succeeded by new virus-free raspberry varieties, and then an exhibit, planned by Long Ashton, to illustrate black-currant breeding and the various uses of this fruit. Finally, during August and September the show cases were filled with apples, showing methods of training trees and rootstock research, and strawberries to illustrate the propagation of healthy plants.

All the plants, with the exception of the cherries, which were grown at Bayfordbury, were grown in pots or boxes at East Malling until the fruit was ripe and then transported to London by road, the exhibit being replaced at about fortnightly intervals. This was no light task and one in which we had had little previous experience ; and it was not accomplished without some unexpected difficulties. The Scientific Liaison Section and the Greenhouse staff are to be congratulated that only once were sufficient plants not ready on time. On this occasion we were grateful to Miss B. Havergal of Waterperry House, who provided us with potted strawberry plants in fruit in early May, when our own were not ripe. We should thank particularly Mr. J. H. Walker and Mr. R. Abel-Smith on whose shoulders the brunt of the work fell.

At the Chelsea Flower Show, the exhibit dealt with sprinkling with water as a means of protecting fruit against frost damage. The centre piece of the stand was a Coldrator Refrigerated Display Case, kindly loaned for the occasion by the International Refrigerator Co. Ltd., in which strawberry plants, continuously sprayed with water and encased in ice but undamaged, were on view.

Five other exhibits were staged in Kent and London, including one of apple breeding on the occasion of the President's Reception at the Linnean Society, London.

Visitors.

Although the total number of visitors, 3,031, shows only a very slight increase over the previous year, there were several special parties and a high proportion of individual visitors from overseas.

The event of the year was the visit in June of the President of the Royal Society, Professor E. D. Adrian, and twenty-five Fellows of the Society. Their programme was designed to show a selection of the field experiments in Great East and Church Fields, as well as something of the research in progress in the laboratories of each Section. This visit proved particularly stimulating to the research staff, who valued highly the

opportunities of discussing their problems with some of the leading scientists of this country. During the summer months the Station received visits from the Association of Applied Biologists, the Royal Meteorological Society, the Parliamentary and Scientific Committee, the Royal Horticultural Society's Fruit Group and the Horticultural Education Association. In all 66 parties were received, totalling 1,950 people ; three of these parties were from overseas.

Individual visitors numbered 695, of which 325 came from overseas. No less than 67 of these visitors from other countries were research workers and some of them stayed with us for several days. Although these visits inevitably encroach on the progress of research to some extent, they are regarded as mutually advantageous, especially in these days of restricted foreign travel.

The dress rehearsals that preceded our Members' Days were well attended by members of staff of the official advisory services and educational institutes, the total attendance being 140. The last group of a third of the horticultural staff of the N.A.A.S. paid a two-day visit in June ; the parties that come during the next period of three years will be able to spend more time on the newer experiments as they are now familiar with the general work of the Station. In all, including various courses, 238 horticultural officers visited the Station in parties.

The Local Day was organized on a Wednesday this year to suit business people in the district, who have a mid-week half-day. The event was not so widely advertised as last year, but the attendance of 140 fully justified the arrangements that were made.

Attendance at Members' Days, which is not included in the above figures, amounted to 438.

Lectures and Demonstrations.

Thirty-four lectures have been given to growers and students, mainly in Kent, but also in Sussex, Essex, Berkshire, Norfolk, Suffolk, Worcestershire, Warwickshire and Cheshire. A fifteen-minute talk on the Winter Spray Programme was given by Dr. A. M. Massee on the B.B.C. Home Service in the " Farming To-day " programme in January. The three ciné films dealing with aspects of apple growing, which were made some ten years ago, are still in demand.

Refresher courses in fruit tree rootstocks and hop diseases were run for the N.A.A.S. officers who were to undertake the certification of these crops.

Judging at the leading commercial and amateur fruit shows provides an interesting interlude for several members of staff and helps to keep them in touch with the high standards of fruit production achieved by the best growers.

Distribution of Experimental Material.

The season 1951-52 will be the last for the time being in which the Station will have any large quantity of the standard varieties of fruit tree rootstocks for distribution. The big reduction in the demand, both for rootstocks and worked trees, during the season 1950-51, which was confirmed by the orders received during August and September, 1951, for the following season, shows that nurserymen and interested growers have now had ample opportunity to re-establish their own commercial stool- and layer-beds and are now producing sufficient rootstocks for current needs.

For the future, therefore, we shall, on the whole, confine ourselves to the propagation of any new rootstocks or new varieties of fruits that are found worthy of introduction in commerce and of sufficient plant material for research needs here or at other research institutes or experimental stations. These needs are quite considerable, as witness the six thousand rootstocks and six thousand worked trees of many different combinations that were needed during 1950-51, as well as a variety of small fruits. There is a continued demand too for collections of plant material for Stations abroad that we shall continue to try to meet, although much care and labour are needed for the collection, correct labelling, packing and despatch of each consignment. The quantities of surplus experimental material available for distribution are likely in future to be much reduced.

Station's Publications.

The complete list of publications during the year appears in Part II of the Research Report and shows a considerable increase with 51 scientific papers and 28 popular articles. Assistance is given continuously in the preparation of the official fruit bulletins and advisory leaflets, and in keeping them up-to-date.

Journal of Horticultural Science.

During the year the production of the Journal has been considerably speeded up and the whole of Volume XXVI was published between March and the end of September, 1951. The flow of manuscript has also increased by at least 50 per cent, so much so that, at the time of writing, sufficient papers have been received to fill at least a volume and a half if all are accepted.

So that the whole volume may be published within the same calendar year, the first number of Volume XXVII will be dated January, 1952, and from then on there should be little difficulty in maintaining regular quarterly publication.

Unfortunately, very large increases in printing costs have seriously affected the Journal's finances and the Publication Committee has been faced with the urgent need to effect economies in the overall length of each volume, in the amount of tabular matter and the number and size of illustrations. It is the Editors' policy to make these economies by insisting on shorter papers rather than by reducing the number to be published.

Unfortunately, these measures are unlikely to be sufficient to cover the increased costs of publication and it has been reluctantly decided that the subscription rates must be raised. The new rates will come into force with Volume XXVIII, which will probably be published in January, 1953.

Volume XXVI contained twenty-five papers, ten from Long Ashton and East Malling, eleven from other Institutes in the United Kingdom, and four from abroad. The widening scope of the Journal is shown by the number of papers now being received concerning horticultural crops other than fruit.

Library Committee.

The Chairman spent about six months of the year under review touring parts of the Commonwealth. The library was enriched as a result by accessions from various sources. Mr. G. K. Argles deputized in his absence with satisfaction to all concerned.

Increased use was made of the library. The 3,086 items borrowed consisted of 484 books, 668 bound journals, 1,044 periodical parts, and 890 pamphlets. In addition, 521 periodical parts were circulated to Sections on the automatic system. The various inter-library lending arrangements continued to be mutually beneficial, as indicated by the figures of 306 items borrowed and 67 photocopies and one microfilm copy obtained for members of Station and Bureau staffs ; and 459 items lent to outside institutions and persons from the Station and Bureau libraries, either on individual request or that of the National Central and Science Museum Libraries.

Additions to the Station library during the year were 19 books purchased, and 51 given (largely by Sir Ronald Hatton) ; 133 bound journals ; 1,226 pamphlets, and unrecorded quantities of separate periodical parts and annual reports.

We should like to thank sincerely the many institutions and individuals who have sent literature in exchange during the year, and also to the following who have made welcome gifts : African Explosives and Chemical Industries Ltd., Professor R. G. Baskett, British National Book Centre, Central Library for Animal Diseases, Dr. E. Collyer, Commercial Counsellor of the Belgian Embassy, Mr. G. H. Freeman, Mr. R. J. Garner, Miss J. R. Groves, Dr. D. J. Halliday, Hawaiian Pineapple Company, Dr. J. Herrero-Catalina, Indian Tea Association, Institut pour l'Encouragement de la Recherche Scientifique dans l'Industrie et l'Agriculture Bruxelles, Jealott's Hill Research Station Intelligence Section, Mr. G. M. Jolly, McCollum-Pratt Institute, Mr. A. C. Mason, Dr. A. M. Massee, Professor T. A. Merrill, Meteorological Office, Ministry of Agriculture and Fisheries, Naugatuck Chemical Export, New Zealand Scientific Adviser B.C.S.O., Nitrate Corporation of Chile Ltd., Reading Public Library, Dr. W. S. Rogers, Dr. P. W. Talboys, Mr. R. P. Tew, Ir. B. Vrijhof, Captain H. B. Weston, and Dr. H. Wormald.

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